PRESSURE VESSEL

API 510 IN SERVICE INSPECTION REPORT

AMERICAS STYRENICS, LLC

VESSEL NO. T-307

TORRANCE FACILITY

TORRANCE, CA

JULY 21, 2017

Prepared by:

HMT Inspection
A Division of HMT Inc.
4075 E. La Palma Avenue, Suite M
Anaheim, CA 92807-1725
714.632.7821

INTRODUCTION

HMT Inspection, a division of HMT LLC, provided on-site inspection services in accordance with API Standard 510 guidelines for pressure vessels to establish the current condition of Vessel No. T-307 at the Americas Styrenics, LLC Torrance Facility in Torrance, CA.

This report is being provided to document these inspection findings based on the inspections performed and to summarize the evaluation of the vessel assessment in accordance with the guidelines of API 510 as applicable.

The owner / user is ultimately responsible for establishing the final suitability for service of Vessel No. T-307 using the current condition of this tank as detailed herein and the decisions made by the owner / user in satisfying API 510 guidelines for continued operation / repair / alteration / modification as appropriate, subject to the following conditions being met:

1. That the owner / user review, evaluate and implement the recommendations set forth in Section 2.0, Summary and Repair Recommendations, of this report or, the owner / user determines that no action(s) need be taken prior to continued service and such decision(s) are documented in the vessel historical record file.

HMT Inspection provided the following personnel:

Ken Strange
API 510 Aboveground Storage Tank Inspector
Certification Number: 49887
Level II Technician

Fernando Rodriguez
Technician

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1.0 DESCRIPTION

GENERAL:

VESSEL NO.:	T-307
DATE OF INSPECTION:	July 21, 2012
OWNER:	Americas Styrenics L.L.C.
DESIGN STANDARD:	ASME Section VIII, Div. 1
VESSEL LOCATION:	Torrance, CA
MANUFACTURER:	Gulf States Fabricators, Inc.
MATERIALS:	
SHELL:	Stainless Steel
HEADS:	Stainless Steel
SERVICE/PROCESS:	Hazardous Waste
NAME PLATE PRESENT:	Yes
MFRS. SERIAL NO.:	0-3130R1
NATIONAL BOARD NO.:	No Data Available
OPERATING PRESSURE:	2 PSIG
MAX. ALLOW. WORKING PRESS. (MAWP):	93 PSI @ 300° F
MFRS. DATA REPORT ON FILE:	No

DIMENSIONS:

DIAMETER:	10.0 ft.
TANGENT LENGHT/HEIGHT	22.0 ft.
NOMINAL SHELL THICKNESS:	0.375 in.
NOMINAL HEAD THICKNESS:	0.375 in.

GEOMETRY:

FOUNDATION:	Two (2) Steel Saddles on Concrete Footings
VESSEL ORIENTATION:	Horizontal
HEAD TYPE:	2 to1 Ellipsoidal
CIRCUMFERENTIAL WELDS:	Butt Welded
LONGITUDINAL WELDS:	Butt Welded

DATES:

YEAR BUILT:	1980
LAST COATED:	N/A
LAST INSPECTION:	July 12, 2012

ACCESS:

STAIRWAY:	Platform

2.0 INSPECTION SUMMARY

The following is a summary of the significant findings of the inspection.

JOB DESCRIPTION: The vessel was inspected for the purpose of detecting defects in the shell, heads, and nozzle appurtenances. Visual (VT) inspection was performed and covered the external surfaces (limited due to the presence of external insulation). Manual Ultrasonic (UT) techniques were utilized to obtain material thickness data at random Corrosion Monitoring Locations (CMLs) at the insulation access ports as shown on the attached Layout Drawing.

HISTORY: This is the 3rd inspection of this vessel performed by HMT Inspection. Prior external inspection was conducted in 2012.

EXTERNAL INSPECTION FINDINGS: Visual (VT) inspection found no severe abnormal conditions existing on the exterior vessel surfaces (which was limited due to the presence of external insulation). Ultrasonic (UT) thickness measurements obtained at the CML points detected no active degradation of the surfaces inspected.

Foundations / Supports: The vessel sits horizontally on two (2) steel saddles on concrete pedestals. Visual (VT) inspection of the steel saddles revealed random areas of coating failure with surface rust present. These areas of coating failure should be properly cleaned and re-coated at the next available opportunity. The concrete pedestals are in acceptable condition.

Insulation / Coating: This vessel is covered externally with insulation. This insulation is in acceptable condition with no defects present. It should be noted that the insulation is not sealed at the saddle supports. This area should be sealed to prevent water intrusion.

Shell: Where visible (through insulation CML ports) the shell is in acceptable condition.

Heads: Where visible (through insulation CML ports) both heads are in acceptable condition.

Nozzles: Where visible, the nozzles are in acceptable condition. Several nozzles and valves did have light surface rust present that should be properly cleaned and re-coated at the next available opportunity. The valve on Nozzle C has a product leak from the valve packing. This valve should be properly serviced at the next available opportunity.

Gasket Surfaces: No gasket surfaces were inspected at this time.

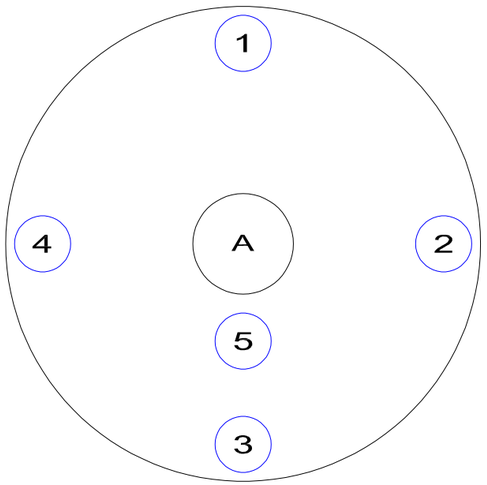
SUMMARY AND REPAIR RECOMMENDATIONS (CONT'D.):

Pressure Relief Device: There is one (1) pressure relief vent (PRV) that is set at 75.0 psi.

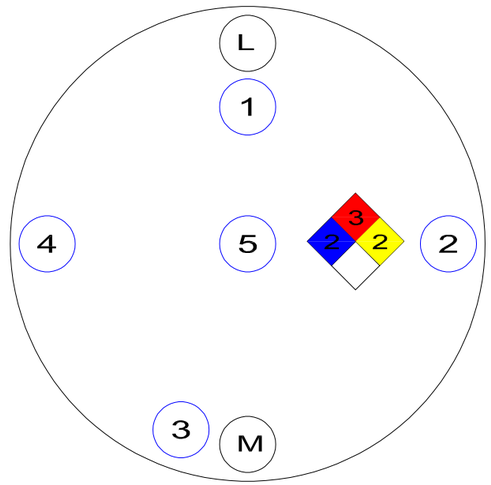
RECOMMENDATIONS: Based on recent operating history, age of this vessel and results of this inspection, no changes in current operating practices are recommended at this time. Current operating temperature and pressure limits can be maintained until further inspection is completed. In-service (external) inspection should be conducted at 5-year intervals.

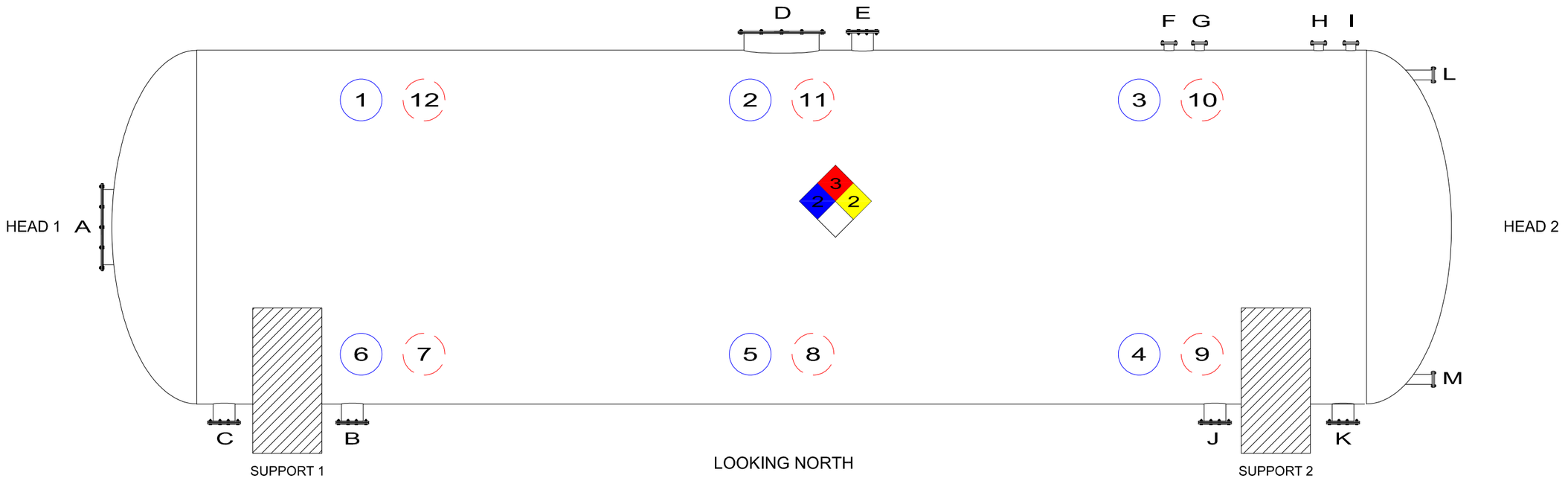
The next external API 510 inspection should be conducted within 5 years and no later than July 2022.

HEAD 1 (WEST)



HEAD 2 (EAST)





DRAWING NOT TO SCALE

NOZZLES

A = 20" MANWAY
B = 2" NOZZLE
C = 3" NOZZLE
D = 24" MANWAY
E = 4" NOZZLE
F = 4" NOZZLE
G = 2" NOZZLE
H = 1.5" NOZZLE
I = 2" NOZZLE
J = 1.5" NOZZLE
K = 4" NOZZLE
L = 1.5" NOZZLE
M = 1.5" NOZZLE

GENERAL

Y
X REFERENCE CORNER

LEGEND

= UT LOCATION

INSPECTION
4075 E. La Palma Ave. Ste. M
ANAHEIM, CA. 92807

TITLE: HORIZONTAL LAYOUT	
OWNER: AMERICAS STYRENICS	
TANK NO: T-307	JOB NO: 23263832
DRAWN BY: C.M.R	DATE: 21 JUL 2017

4.0 INSPECTION REPORT

4.1 EXTERNAL INSPECTION CHECKLIST

✓		DESCRIPTION	COMMENTS
Y	1	Inspect foundation for damage.	Reference Section 2.0
Y	2	Search for indications of leakage.	None found, Acceptable
Y	3	Inspect for cavities and vegetation around foundation.	Acceptable
Y	4	Check for proper water runoff and drainage away from the foundation.	Acceptable
N	5	Check for settlement around the foundation for the vessel.	N/A
Y	6	Inspect vessel anchor bolts (if present).	Acceptable
Y	7	Inspect for coating failure, pitting, and corrosion.	Reference Section 2.0
Y	8	Inspect entire vessel surface (shell and heads) for leaks or corrosion.	Acceptable
Y	9	Inspect vessel insulation (if present) note condition and damage (if any).	Reference Section 2.0
Y	10	Check support welds to vessel for corrosion or defects.	Acceptable
Y	11	Conduct Visual inspection of entire vessel (shell and heads) for bulges or deformation.	Acceptable
Y	12	Check piping, valves flanges and bolting for leaks or signs of damage.	Reference Section 2.0
Y	13	Inspect for signs of corrosion or other defects around all manways, nozzles, and attachments.	Reference Section 2.0
Y	14	Inspect all pressure relieving devices and record data on vessel nozzle table.	Reference Section 2.0
Y	15	Conduct Ultrasonic Thickness readings of entire vessel (shell and heads). Record all data.	Reference Table A
Y	16	Inspect vessel access structures, ladders, stairway, cages and handrails.	Acceptable

4.1.1 VESSEL NOZZLE TABLE

Item	Description	Pipe Size (in.)	Location	Neck Thick (in.)	Comments
A	Manway	20.0	Head	0.881	
B	Nozzle	2.0	Shell	--	Only neck reduction exposed
C	Nozzle	3.0	Shell	--	
D	Manway	24.0	Shell	0.409	
E	Nozzle	4.0	Shell	0.366	
F	Nozzle	4.0	Shell	--	Weld seam made impossible to obtain reading
G	Nozzle	2.0	Shell	0.230	
H	Nozzle	1.5	Shell	--	Not within safe reach
I	Nozzle	2.0	Shell	--	Not within safe reach
J	Nozzle	1.5	Shell	0.195	
K	Nozzle	4.0	Shell	--	Only neck reduction exposed
L	Nozzle	1.5	Head	--	Only neck reduction exposed
M	Nozzle	1.5	Head	--	Only neck reduction exposed

5.0 NDT INSPECTION

5.1 NDT INSPECTION SCOPE

The following Nondestructive Testing (NDT) was conducted to evaluate the physical characteristics of the tank:

A) Visual Inspection (VT) of areas for the detection of anomalies or significant metal loss which may affect the integrity. Performed in accordance with HMT Inspection VT Procedure No. 1611.9, Revision No. 3.

B) Random Ultrasonic (UT) shell / head readings. Performed in accordance with HMT UT Procedure No. 1611.1, Revision No. 5.

6.0 EQUIPMENT

6.1 ULTRASONIC

UT equipment utilized for the inspection was a Krautkramer Branson USM-35 Flaw Detector.

Transducer equipment utilized was a high temperature Panametrics, 5.0 MHz, 0.312 inch dual element.

Echogel 20 was used as a couplant.

Calibration block equipment utilized was a 5 step, 4340 steel test block.

7.0 TABLES

TABLE A
VESSEL CML READINGS
(in inches)

Location	2007 Readings	2012 Readings	2017 Readings
1	0.450	0.442	0.425
2	0.422	0.419	0.412
3	0.431	0.436	0.430
4	0.430	0.420	0.401
5	0.409	0.407	0.411
6	0.450	0.438	0.412
7	0.444	0.428	0.410
8	0.419	0.411	0.419
9	0.427	0.426	0.400
10	0.428	*	*
11	0.429	0.428	0.418
12	0.441	0.435	0.410

* No Inspection Port

TABLE B
WEST HEAD CML READINGS
(in inches)

Location	2007 Readings	2012 Readings	2017 Readings
1	0.505	0.494	--
2	0.511	0.510	0.499
3	0.520	0.507	0.520
4	0.520	0.505	0.512
5	0.510	0.506	0.496

TABLE C
EAST HEAD CML READINGS
(in inches)

Location	2007 Readings	2012 Readings	2017 Readings
1	0.531	*	*
2	0.519	0.510	0.509
3	0.501	0.495	0.489
4	0.520	0.518	0.510
5	0.527	*	*

* No Inspection Port

8.0 WARRANTY

WARRANTY

HMT Inspection, a division of HMT LLC ("HMT") has evaluated the condition of this vessel based on the observations and measurements made by the HMT Inspection Inspector. While our evaluation accurately describes the condition of the vessel at the time of inspection, the vessel owner / operator must independently assess the inspection information / report provided by HMT Inspection and any conclusions reached by the vessel owner / operator and any action taken or omitted to be taken are the sole responsibility of the owner / operator. With respect to inspection and testing, HMT Inspection warrants only that the services have been performed in accordance with accepted industry practice. If any such services fail to meet the foregoing warranty, HMT Inspection shall re-perform the service to the same extent and on the same conditions as the original service.

The preceding paragraph sets forth the exclusive remedy for claims based on failure or of defect in materials or services, whether such claim is made in contract or tort (including negligence) and however instituted, and, upon expiration of the warranty period, all such liability shall terminate. The foregoing warranty is exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE SHALL APPLY, nor shall HMT Inspection be liable for any loss or damage whatsoever by reason of its failure to discover, report, repair or modify latent defects or defects inherent in the design of any vessel inspected. In no event, whether a result of breach of contract, warranty or tort (including negligence) shall HMT Inspection be liable for any consequential or incidental damages including, but not limited to, loss of profit or revenues, loss of use of equipment tested or services by HMT Inspection or any associated damage to facilities, down-time costs or claims of other damages.

Vessel Stand-Off

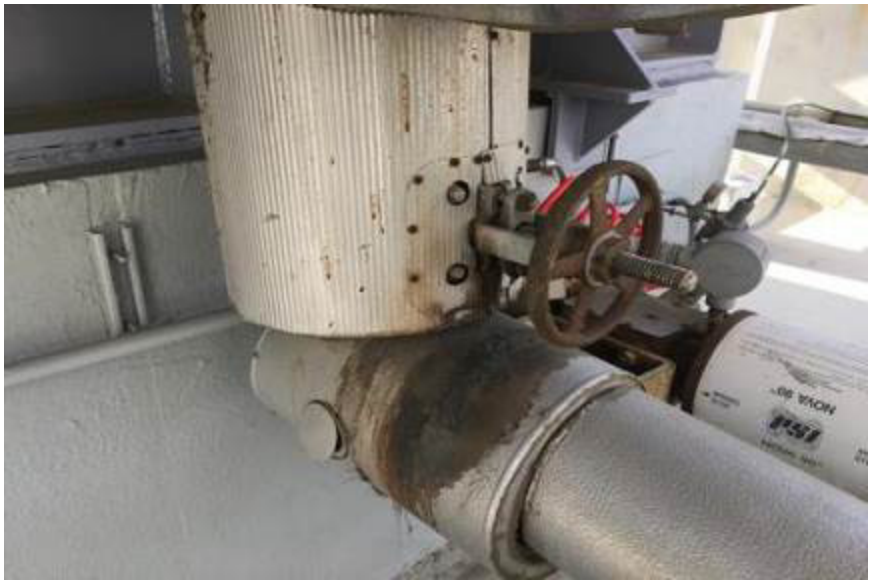
Support

Support

East Head

Lowest East Nozzle

West Head



Lower West Nozzle

Support

Bottom Nozzle

Nozzle

Top Shell

PRV

PRV Tag

Top Shell Nozzle

Top Nozzle

AMERICAN PETROLEUM INSTITUTE
Individual Certification Programs: ICP™

API Individual Certification Programs

certifies that

Kenneth S. Strange

has met the requirements to be a certified

API-510 Pressure Vessel Inspector

Certification Number *49877*

Original Certification Date *November 30, 2013*

Current Certification Date *November 30, 2016*

Expiration Date *November 30, 2019*

Tina Briskin
Manager, Individual Certification Programs

This is a copy, the original has gold foil typeset. To verify authenticity please go to http://myicp.api.org/inspectorsearch/ and follow instructions to verify inspectors' status.

Certificate of Qualification

HMT

INSPECTION

This is to Certify

Kenneth S. Strange

is qualified in accordance with the HMT Procedure for Qualification and Certification of Nondestructive Examination Personnel which is in compliance with the requirements of the American Society for Nondestructive Testing Recommended Practice SNT-TC-1A-2011 ed.

Method	Level	Expiration Date
API 653	No. 31081	04/30/2019
API 510	No. 49877	11/30/2019
API 570	No. 32170	12/31/2019

Hugh K. Howerton

Hugh K. Howerton
ASNT Level III

February 3, 2017
Date